

Pahsimeroi River Subbasin Assessment and Total Maximum Daily Load

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PAHSIMEROI RIVER SUBBASIN ASSESSMENT AND TOTAL MAXIMUM DAILY LOAD

EXECUTIVE SUMMARY

Water quality, native fish populations and riparian habitat conditions have been issues of concern in the Pahsimeroi River watershed since the combined effects of warm season grazing, introduction of exotic species, and human-caused channelization and diversion have synergized with natural infiltration of stream flows to limit the production and survival of native resident and anadromous fish. The Idaho Department of Environmental Quality (DEQ) has identified the Pahsimeroi River as not supporting the beneficial uses of salmonid spawning and coldwater aquatic life as defined in state Water Quality Standards and the federal Clean Water Act. Additionally the Pahsimeroi River is an important component of the Upper Salmon River bull trout recovery unit for the state of Idaho.

Assessments by DEQ have identified that water quality has been limited by deposition of sediment in the stream channel due to streambank erosion and elevated stream temperature due to the reduction of riparian vegetation. Previous assessments by the Bureau of Land Management, the U.S. Forest Service, and the State Soil Conservation Commission have also identified similar sources of pollutants and the problems associated with water quality in the Pahsimeroi River watershed.

Recent improvement in land management practices have created the future potential for improving water quality, fish habitat conditions, fish passage, spawning success and connectivity within and among the Pahsimeroi River, its tributaries, and the Salmon River. Water quality and habitat conditions have shown improvement where best management practices have been implemented. It is expected that with continued riparian management beneficial uses will be restored in much of the system. It is not likely that beneficial uses will ever be observed in segments of the watershed where natural dewatering from stream flow infiltration occurs during significant periods of the year. The relationship of groundwater and surface water is very important within the Pahsimeroi River watershed. The two cannot be separated. The natural conditions within the watershed play an important role when attempting to identify the reduction of pollutant loads necessary for beneficial use restoration. It is not prudent to pour money into water quality improvement projects where beneficial uses cannot be attained, and likely never existed naturally.

The Clean Water Act requires that the state of Idaho identify water quality limited surface waters and develop a plan to restore beneficial use support to these waters. The Endangered Species Act requires that conservation plans be developed and implemented to restore anadromous and bull trout populations to levels that insure their persistence in the Pahsimeroi River Watershed. To the extent practical and possible the Pahsimeroi total maximum daily load (TMDL), in addition to restoring beneficial uses on water quality limited water bodies, will assist any conservation plan for endangered species recovery by improving water quality and habitat conditions through the implementation of best management practices.

DEQ has developed recommendations for the reduction of stream bank erosion and water temperature within the Pahsimeroi River that would ultimately result in beneficial use support

through improving stream bank stability and subsequently riparian vegetation. Sediment loads are quantified through stream bank erosion inventories that estimate stream bank erosion based on stream bank conditions observed and documented along 17 reaches of the Pahsimeroi River. Instream sediment targets have been identified from literature values that are supportive of salmonid spawning and coldwater biota. These target values will be used to track the progress of stream bank recovery and determine the need for additional management practices to improve water quality. Maximum daily average and daily instantaneous maximum temperatures are quantified through temperature monitoring conducted at the Idaho Power Company's Pahsimeroi Fish Hatchery operated by the Idaho Department of Fish and Game. Instream temperature targets have been identified from existing State of Idaho Water Quality Standards for salmonid spawning and rearing. Temperature targets have been used to identify temperature load reductions that are required to meet state water quality standards.

The recommended load allocation within this TMDL is an overall reduction of 74% in sediment from streambank erosion. Table 1 summarizes the prescribed sediment reductions for the Pahsimeroi River. This reduction of sediment from stream bank erosion should result in a reduction of streambed fine sediment smaller than 6.35 mm (0.25 in) to the target level of 28% or less to a depth of 6 inches in anadromous fish spawning habitat and to a depth of 4 inches in exclusively resident fish spawning habitat. These reductions incorporate an implicit margin of safety to assure restoration of beneficial uses and equate to stream bank erosion rates expected at 80% stream bank stability, which is considered natural background erosion within this TMDL. Monitoring will be conducted by land management agencies to determine the adequacy of reductions and management practices.

The recommendation within this TMDL is that there be no change in the waste load allocation for the Pahsimeroi River Hatchery. Given the site-specific conditions found at the Pahsimeroi River Fish Hatchery, it is felt that the existing National Pollutant Discharge Elimination System (NPDES) permit is adequately protective of water quality at and below the point of discharge of hatchery effluent from the rearing ponds located just downstream from Dowton Lane, and that more restrictive limitations are not required at this time. Additionally, there will be no net increase of future effluent concentration limitations of suspended or settleable solids to the Pahsimeroi River from the Pahsimeroi Hatchery rearing ponds. The NPDES permit sets effluent limitations for suspended solids not to exceed 5.0 mg/l daily average with the daily maximum not to exceed 15 mg/l and the limitation for settleable solids is 0.1 ml/l daily average evaluated from samples collected once per month at the discharge of the rearing ponds (Table 2).

Table 1 Sediment load allocations/reductions by erosion inventory reach.

Reach Number (from downstream to upstream)	Existing Erosion Rate (t/mi/y)	Existing Total Erosion Rate (t/y)	Proposed Erosion Rate (t/mi/y)	Load Allocations (t/y)	Erosion Rate Percent Reduction	Percent of Total Erosion
1	1.8	6.0	2.2	7.7	0	<1
2	14.8	40.0	6.7	18.3	55	1
3	9.4	30.0	3.4	10.6	64	1
4	24.7	43.0	7.9	13.7	68	2
5	10.0	27.0	6.0	15.0	40	1
6	63.0	115.0	9.0	16.4	86	4
7	2.0	4.0	4.0	8.0	0	<1
8	15.0	43.0	6.0	16.0	60	2
9	111.0	60.0	7.0	4.0	94	2
10	92.0	65.0	13.0	9.6	86	2
11	67.0	236.0	11.0	39.3	84	8
12	2.2	1.2	2.2	1.2	0	0
13	40.0	21.0	7.0	3.5	83	1
14	2.0	1.0	2.0	1.6	0	<1
15	8.0	22.0	3.0	9.1	63	1
16	177.0	1291.0	73.0	531.0	59	45
17	147.0	833.0	7.0	39.0	95	29
Totals		2838.2		744.1	74	

Table 2 Pahsimeroi River TMDL summary of load reductions.

Total Cumulative Sediment Reduction from Streambank Erosion	Waste Load Allocation for Suspended and Settleable Solids from the Pahsimeroi Hatchery	Reduction of Daily Average Temperature at Pahsimeroi Hatchery Point of Compliance
74 Percent sediment load reduction	5.0 mg/l daily average of suspended solids	6° C (11° F) May and August
2,094 tons sediment load reduction	15 mg/l daily maximum of suspended solids	40% degrees C (18% degrees F) temperature load reduction
	0.1 ml/l daily average of settleable solids	